

to align in a planar direction with pretilt.

22. (New) The process of claim 21 wherein the application step is accomplished by a squeegee.

23. (New) The process of claim 21 wherein the application step is accomplished by brushing, spraying, capillary action or meniscus coating. .

24. (New) The process of claim 21 wherein the charged electrode surface is a glass or indium tin oxide (ITO) having a negative charge.

25. (New) The composition of claim 6 wherein the solvent is water.

Remarks

This communication addresses the rejections made in the outstanding office action of March 21, 2000. Claims 1, 3-10, 12, 13, and 15-24 are now pending.

The Office Action

Claims 1, 2 and 7 were rejected under 35 U.S.C. §102(b) as anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious over Gohy et al.

Claims 1-4 and 7 stand rejected under 35 U.S.C. §102(b) as anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious over Cheng et al.

Claims 1, 7, 8, 10, 16 and 17 stand rejected under 35 U.S.C. §102(e) as anticipated by Rhee et al. (U.S. Patent No. 5,639,398).

Claims 5, 6, 9, 11-15 and 18 were objected to as being dependent upon a rejected base claim.

Claims 19 and 20 have been allowed.

The Amendments to the Claims

Initially, applicants appreciate the indication of allowable subject matter.

Regarding the amendments to the claims, claim 2, reciting a *heterocyclic* rigid-rod poly(ionomer) has been incorporated into claim 1. As such, claims 3-5, 7-10 and 12-18 all require the rigid-rod poly(ionomer) to be heterocyclic.

Claim 6, objected to as dependent upon a rejected base claim, has been placed in independent form.

Claim 14, objected to as being dependent upon a rejected base claim, has been rewritten in independent form as claim 21.

New claims 22-24 are equivalent to claims 15-17, but are now dependent from new claim 21.

New claim 25, dependent upon claim 6 which was originally objected to as being dependent upon a rejected base claim, recites that the solvent is water.

The Rejections Under 35 U.S.C. §§102(b)/103(a) Over Gohy et al.

Briefly, the Examiner has rejected claims 1, 2 and 7 as anticipated under 35 U.S.C. §102(b) or, alternatively as obvious under 35 U.S.C. §103(a) over Gohy et al (Macromolecules, 1996, 29, 3376-3383).

Initially, applicants question the status of the *Gohy et al* publication as prior art under 35 U.S.C. §102(b). The reference was published in what appears to be mid-to late 1996 (vol. 10 of issue 29). In order for a reference to qualify as prior art under 35 U.S.C. §102(b), the reference must have been published more than 1 year prior to the claimed priority date. Because applicants have a claimed priority date of January 21, 1997, it is unlikely that the *Gohy et al* reference is "prior art" under 35 U.S.C. §102(b). Rather, it most likely qualifies under 35 U.S.C. §102(a).

Be that as it may, the Examiner notes that *Gohy et al* teaches a liquid crystal polyionomer containing a low molecular weight ionic mesogenic group. However, no solvent capable of dissolving the rigid-rod poly(ionomer) or salt thereof is disclosed for **the composition**. Also, no **heterocyclic rigid-rod poly(ionomer)** is disclosed as required by claim 1 (originally present in claim 2).

As such, the composition of claim 1 is neither anticipated nor is obvious in

view of Gohy et al. Withdrawal of the rejection is therefor respectfully requested.

The Rejection Under 35 U.S.C. §§102(b)/103(a) Over Cheng et al.

The Examiner next rejected claims 1-4 and 7 as anticipated under 35 U.S.C. §102(b) or, in the alternative, as obvious under 35 U.S.C. §103(a) over *Cheng et al* (Mol. Cryst. Liq. Cryst., 1995, vol. 269, 1-38).

In making the rejection based on Cheng et al, the Examiner indicates that Cheng et al discloses a liquid crystal polyionomer containing a low molecular weight ionic mesogenic group.

Applicants submit that while heterocyclic liquid crystal polyionomers are disclosed by Cheng et al, Cheng et al does not appear to disclose **rigid-rod** poly(ionomers) that are positively or negatively charged, much less those rigid-rod poly(ionomers) in a solvent composition.

Applicants submit that in order for a liquid crystal poly(ionomer) to be classified as "rigid rod", it must have a stable, rather inflexible, straight backbone and have a long persistence length. The heterocyclic poly(pyridinium) liquid crystal of the examples in the present application has a persistence length of greater than 100Å. These types of rigid-rod poly(ionomeric) compounds do not appear to be recognized by Cheng et al.

In view of the above, Applicants submit that Cheng et al does not anticipate or render obvious the claimed compositions. Withdrawal of the rejection is therefor respectfully requested.

The Rejection Under 35 U.S.C. §102(e) Over Rhee et al.

Finally, the Examiner has rejected claims 1, 7, 8, 10, 16 and 17 under 35 U.S.C. §102(e) as anticipated by *Rhee et al* (U.S. 5,639,398). It is noted that *Rhee et al* issued after the present application's effective filing date but was filed before the present application was filed. The Examiner has identified *Rhee et al* as disclosing a liquid crystal polyionomer alignment layer containing a low molecular weight ionic mesogenic group, the conductive liquid crystal polymer

having been dissolved in water or DMSO. ITO glass coating is also taught as identified by the Examiner.

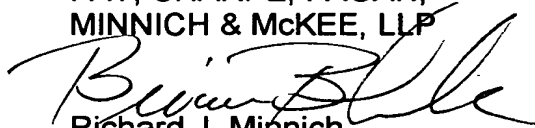
Applicants have now amended claim 1 (from which claims 7, 8, 10, 16 and 17 ultimately depend) to recite the limitation of claim 2 that the rigid-rod poly(ionomer) is a *heterocyclic* rigid-rod poly(ionomer). As claim 2 was not subject to the rejection based upon Rhee et al, applicants submit that claims 1, 7, 8, 10, 16 and 17 now define patentably over the cited Rhee et al patent. Withdrawal of the rejection is therefor respectfully requested.

Conclusion

Applicants believe the present application is now in condition for allowance. Withdrawal of the rejections and early notification of allowability is earnestly solicited. Should any issues remain, the Examiner is encouraged to contact the undersigned to attempt to resolve any such issues.

Respectfully submitted,

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CERTIFICATE OF MAILING

I hereby certify that this **Amendment and Response** in connection with U.S. Patent Application Serial No. **09/284,828** is being deposited with the United States Postal Service as first-class mail, postage prepaid, in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231 on September 21, 2000.

Abigail L. Boone

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